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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/846,205	05/02/2001	Hoon Lee	11349-P66632US0	7246

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MAYER, BROWN, ROWE & MAW LLP  
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WASHINGTON, DC 20006

EXAMINER
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PERILLA, JASON M

ART UNIT	PAPER NUMBER
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2611

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/24/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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<b>Office Action Summary</b>	<b>Application No.</b> 09/846,205	<b>Applicant(s)</b> LEE ET AL.	
	<b>Examiner</b> Jason M. Perilla	<b>Art Unit</b> 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 January 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 2, 4-6 and 8-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4-6, and 8-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. Claims 1, 2, 4-6, and 8-16 are pending in the instant application.

#### ***Response to Arguments***

2. Applicant's arguments filed January 16, 2007 have been fully considered but they are not persuasive.

Regarding argument paragraph A, the fact that Wei discloses "classes of information" does not take away from the fact that is discloses the claimed subject matter. Furthermore, the claims of the instant application do not disclaim the use of data having "classes of information".

Regarding argument paragraph B, notwithstanding the fact that the new limitation: "based on the location of a unit of data within the TX data" is new subject matter as applied below, it is also disclosed by Wei and the AAPA as applied below.

Regarding argument paragraph C, Wei does disclose the distribution of data based upon predetermined and *different data transmission rates*. As previously noted, the Examiner insists that the overall transmission rate of any given system is directly determined (in part) according to the symbol rate. Although Wei may disclose the same symbol rate per transmit processing means, because each transmit processing means transmits symbols having different bit/symbol values, the overall data transmission rate of each transmit processing means varies.

#### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. § 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the

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art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1, 2, 4-6, and 8-16 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding independent claims 1, 6, 10, and 14, the new limitation: "based on the location of a unit of data within the TX data" is new matter.

Regarding dependent claims 2, 4, 5, 8, 9, 11-13, 15, and 16 are rejected as being based upon a rejected parent claim.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 2, 4-6, and 8-16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Wei (U.S. Pat. No. 5243629 – newly cited) in view of the Applicant's Admitted Prior Art ("AAPA"; Specification May 2, 2001, pgs. 1-3, fig. 1).

Regarding claim 1, Wei discloses QAM transmission band splitting means (fig. 1, ref. 105) for distributing (fig. 1, refs. 11, 13, . . . 18, and 22) transmission (TX) data (fig. 1, ref. 5) to a predetermined number of band transmit processing means (fig. 1, refs. 121, 123, . . . 128 and 132; 141, 143, . . . 148, and 152); wherein the band splitting

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means distributes the TX data to each of a predetermined number of band TX processing means based on predetermined (figs. 5-8, i.e. 4, 8, 12, or 16 bits) and different (i.e. 4, 8, 12, or 16 bit) data transmission rates (col. 3, lines 20-27; col. 4, lines 1-30; col. 4, lines 11-13) and based on the location of a unit of data within the TX data, converting or modulating each of the band transmit processing means outputs to a passband signal (fig. 1, refs. 161, 163, . . . 168, and 172), and synthesizing means (fig. 1, ref. 175) for synthesizing the converted passband signals. As broadly as claimed, Wei discloses that the band splitting means distributes the data to the TX processing means based on the location of a unit of data within the TX data because the band splitting means of Wei divides the data into portions relative to each other. That is, depending upon the location of each unit, they may be divided and separated accordingly.

Wei discloses that each of the TX processing means comprises: channel encoders, constellation mappers, and baseband modulators (fig. 1), but does not explicitly disclose that the predetermined number of band TX processing means is for: symbol-encoding the output data of the band splitting means, pulse-shaping, and interpolating the symbol-encoded data. Further, Wei does not disclose TC (Transmission Convergence) sub-layer means for performing frame processing and error correction for the transmission data or digital-to-analog converting and outputting means for converting the synthesized digital TX data to an analog synthesized TX signal to output.

However, the AAPA according to figure 1 teaches an exemplary band transmit processing means for symbol-encoding (fig. 1, ref. 102) the output data of the band splitting means, pulse-shaping (fig. 1, ref. 104), and interpolating (106) the symbol-encoded data. The AAPA further teaches TC (Transmission Convergence) sub-layer means (fig. 1, ref. 100) for performing frame processing and error correction for the transmission data and digital-to-analog converting and outputting means (fig. 1, ref. 112) for converting the synthesized digital TX data to an analog synthesized TX signal to output. The AAPA teaches that the symbol encoding, pulse shaping, and interpolating allows for a variable symbol rate (pg. 2, lines 7-10) and that the TC sub-layer provides the advantage of frame processing and error correction (pg. 1, lines 20-23). One skilled in the art would find it an advantage to utilize the TC sub-layer means and components of the band transmit processing means as taught by the AAPA because they provide an exemplary means to transmit data at various data rates. Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made to utilize the various components of the band processing means and the TC sub-layer means as taught by the AAPA in the apparatus of Wei because they provide exemplary means for QAM symbol transmission with various data rate flexibility. Furthermore, one skilled in the art would find it obvious that the transmitter of Wei in view of the AAPA would require that the band processing means output is digital-to-analog converted for transmission because an analog signal is required for over the air transmission. Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made to apply a

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digital-to-analog converter after the synthesizer as taught by the AAPA in the apparatus of Wei because a digital signal must be converted to analog before it is transmitted over the air.

Regarding claim 2, Wei in view of the AAPA disclose the limitations of claim 1 as applied above. Further, in the apparatus of Wei in view of the AAPA, it is inherent that the data transmission rate of the TC sub-layer means is equal to sum of data transmission rates of the band TX processing means. The TC sub-layer means may be applied before the band splitting means. Therefore, the TC sub-layer supplies all of the data to the band splitting means and, hence, to all of the band TX processing means.

Regarding claim 4, Wei in view of the AAPA disclose the limitations of claim 1 as applied above. Further, Wei in view of the AAPA disclose that the band splitting means distributes the TX data to each of the predetermined number of band processing means in four bit units (figs. 5-8). That is, the QAM symbols are one of 4 bit per symbol, 8, 12, or 16 bits per symbol. Wei does not disclose that the distribution of bits is grouped into bytes. However, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to split the data into units of bytes. Applicant has not disclosed that the division of data into bytes provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected the apparatus of Wei in view of the AAPA to perform equally well with dividing data into four bit segments or eight bit byte segments because the unit of data division would be chosen only according to the desired data rate of the apparatus. Therefore, it would have been obvious to one having ordinary skill in the art

at the time which the invention was made to divide the data into four bit segments or eight bit bytes depending upon the design choice to accommodate the desired data rate of the system.

Regarding claim 5, Wei in view of the AAPA disclose the limitations of claim 1 as applied above. Further, Wei in view of the AAPA disclose that the band splitting means encodes the TX data in four bit units (figs. 5-8). However, it would have been obvious to one having ordinary skill in the art at the time which the invention was made to encode the data into four bit segments or eight bit bytes depending upon the design choice to accommodate the desired data rate of the system as applied to claim 4 above.

Regarding claims 6, 8, and 9, the claims are disclosed by Wei in view of the AAPA as applied to claims 1, 4, and 5, respectively, above.

Regarding claims 10, 11, 12, and 13, the claims are disclosed by Wei in view of the AAPA as applied to claims 1, 2, 4, and 5, respectively, above.

Regarding claims 14, 15, and 16, the claims are disclosed by Wei in view of the AAPA as applied to claims 1, 4, and 5, respectively, above.

### ***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR § 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the



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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M. Perilla whose telephone number is (571) 272-3055. The examiner can normally be reached on M-F 8-5 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jmp

  
Jason M. Perilla  
September 5, 2006

  
CHIEH M. FAN  
SUPERVISORY PATENT EXAMINER